# Investigation on marketability of video lectures' notes extraction

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**ABSTRACT** – Learning with technology has become essential in today's educational institution. The advance of internet technology allows education anywhere at any time. A lot of video lectures have been uploaded using variety of platform, giving great opportunity to students in revising their subjects anytime especially during examination. Despite that student enjoy watching video lectures for the purpose of learning, students prefer on reading the notes, due to time constraint. In this study, we propose a preliminary study on undergraduate students' preferences and the video lectures note extraction tools. From a survey, more than 90% representing that majority of students agree in using an application that were able to extract notes from video lectures.

## 1. INTRODUCTION

The usage of multimedia data around the world has been increased to a different level. It is acknowledged that advances in technology have an influence on the way people create, share, use and develop information in society. The development of all in one electronic gadget such as PDAs, smart phones, laptops and digital cameras has produced generation of images, videos and audios in just a click away, benefiting in various applications such as entertainment, tourism and also education.

The main advantages in the use of video lectures were the ability to help working-students by bridging the gap given by their absence during regular lectures, support regular students by giving them the opportunity to recover lectures lost due to forced or elective absence, assist students having difficulties with the lecture's spoken language and give students a mean to review critical sections and check their notes.

A survey performed by [1] measures learning benefits from voluntarily used instructional videos that supplement classroom lectures. The video was prepared by the course instructor and same content as the classroom lectures, but were delivered at a slower, more step-by-step pace. As a result, the study shown statistically significant number of surveyed students assessed the videos as a helpful tutoring resource, giving the benefits which students control of the lecture and are portable, can replay segments and stop the lecture as they study to understand the content, can skip topic segments they understand, and can adjust the instructor's delivery speed and topic selection to match their individual learning pace and interests. This approach allows them to view the video when and where they study most effectively.

A lot of video lectures have been uploaded using variety of platform, giving great opportunity to students in revising their subjects anytime especially during examination. For instance, massive open online course **(**MOOCS) are asynchronous, open-access, Web-based courses geared toward enrolling hundreds or thousands of students at a time. However, it is a challenge for students to quickly review the desired lecture contents if they are facing final exam with very limited time for revision. For this reason, reference priority is to the lecture note contained in the video. A major challenge facing all students relates to the capacity to quickly extract important concepts from lectures [2], [3].

Since there is limited understanding of their effectiveness in terms of learning and usability, there is a need for tool that effectively filter and efficiently search through large amounts of visual data such as lecture notes. There were some research on searching the information by extraction data using color histogram [4], [5],[6] but there is no research that involve extracting lecture notes from lecture videos.

A study conducted by [4] focusing on the different methods of color feature extraction and then presents a comparative study for selection of these methods in various applications. The researchers review various methods, namely Global Color Histogram, Histogram Intersection, Image Bitmap, Local Color Histogram, etc., employed to extract the color feature.

In addition, a survey review done by [6] had interest in features that can be extracted from video data for indexing and retrieval along with similarity measurement methods. The survey focusing on video structure analysis, like, shot boundary detection and key frame extraction, different feature extraction methods including SIFT, SURF, etc, similarity measure, video indexing, and video browsing which they concluded that shot boundary detection dual threshold based histogram comparison algorithm gives good performance.

Despite that there were many tools or applications which relates to learning videos, this study had interest on tools or application that were able to implement notes

extraction based on video lectures. In our finding there were no such tools or application exists. We believe that this kind of tools were able to help students in extracting the notes from video lectures automatically in which may help students to have a quick reference as compared to watching the whole video. In this paper, we suggest the notes extraction from the video will be more effective and less time consuming during the final examination week.

## 2. SURVEY RESULTS AND DISCUSSION

A survey has been performed in order to ensure if this prototype may benefit the students. This survey was conducted among undergraduate students of the Faculty of Communication and Technology (FICT) in Universiti Teknikal Malaysia Melaka. This survey involved 33 junior students and 40 senior students of Computer Science majoring in Database Management. From total of 73 students, there were 25 male students and 48 female students. The survey was done to seek information on these undergraduate students' preferences of materials during their final examination and students' intentions on our suggested tool notes extraction from video lectures.

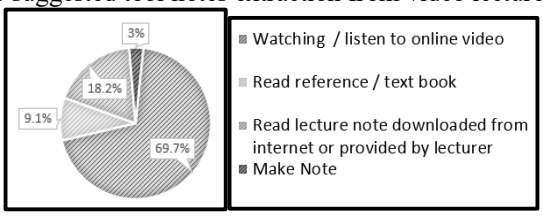


Figure 1 Preference references / materials by students.

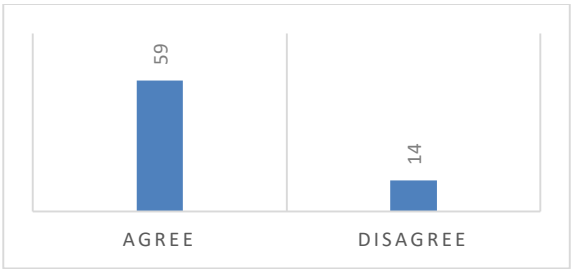


Figure 2 Students enjoyable on watching lecture video.

Figure 1 illustrates the preferences references materials used by the students in preparing themselves for final examinations. Nearly 70% of the students prefer reading lecture notes while 18.2% of students prefer watching online video. There were a number of 9.1% of students who prefer reading reference or textbook and a small remaining number prefer to make note.

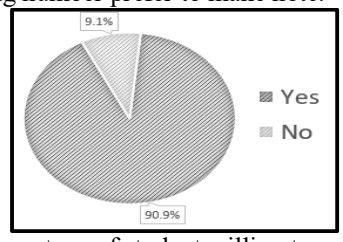


Figure 3 Percentage of student willing to use Notes Extraction Video Lecture Application.

Figure 2 display the histogram of students' enjoyable on watching lecture video. From 73 students, 59 students enjoy watching lecture video while 14 have less interest on watching lecture video. There was also research on the instructional and design of lecture video in which it may contribute or become a reason behind why student disagree on watching lecture video.

To view the potential of our suggested tool, we ask students if they are interested in using the Notes Extraction Video Lecture Application (henceforth, NEVLA). This NEVLA is a tool that manage to extract slide notes from a lecture video. Figure 3 display a pie chart representing percentage of students' willing or agree to use our suggested tool. From 73 students, approximate of 91% student are willing to use this application while 9.1% student did not agree.

## 3. CONCLUSION

With the advanced of technology, education had various tools and materials appear to help student's capability in learning. Video lectures gave huge benefits to students as students are able improved to replay and relearn using these materials anywhere at any time.

From our investigation, the learning materials used among students when learning were video lectures, lecture notes and books. During study week, most of the students rely on lecture notes more as compared to video lectures or books. From this study, it is high potential to extracting lecture notes from video lectures.

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